Anatomic and functional studies are required to establish the diagnosis. Arteriography is the primary diagnostic modality because less-invasive tests, such as rapid sequence intravenous pyelography and isotopic renography, are imprecise and nondiagnostic in approximately 50% of patients with this disorder. The functional significance of arteriographically shown renal artery stenoses is confirmed by selective renal vein renin assays, split renal function studies or both. These studies are essential, for only 50% of such lesions are functionally significant and the cause of a patient's hypertension.

We consider vascular reconstruction of the renal artery the preferred method of treatment for patients with renovascular hypertension. Recent studies report a mortality rate of 0.5% to 2% and a technically successful operative result in more than 95% of cases following revascularization. Cure of hypertension occurs in 40% and significant improvement in 51%. Also, revascularization preserves and in selected circumstances improves overall renal function. These salutary effects are long lasting, for a recent report with a 15-year follow-up documented excellent blood pressure control and a reduction in morbid events and death from cardiovascular causes following renal revascularization.

Medical management of the disorder has been aided by the recent development of specific angiotensin-converting enzyme inhibitors. Whether medical therapy using these inhibitors and the potent arsenal of other antihypertensive medications is comparable with surgical treatment is not known. Our preference for operative management is based on two reports prospectively contrasting surgical and medical treatment that have shown significant preservation of renal function, better control of hypertension and improved survival with surgical treatment.

Percutaneous transluminal angioplasty (PTA) of the renal arteries is a relatively new approach to treating renovascular hypertension. National experience and follow-up are limited, but short-term results approaching those of surgical treatment have been published for specific lesions. In particular, fibrodysplastic and segmental atherosclerotic stenoses appear to respond well to PTA. Conversely, atherosclerotic lesions affecting the ostia of the renal artery and diffuse atherosclerotic involvement of the renal artery respond poorly. The long-term outcome of such dilatations is unknown and awaits further study. At present, the exact role PTA will ultimately play in treating this disorder remains to be determined.

To distinguish patients with renovascular hypertension from the hypertensive population requires knowledge of the disorder's characteristic clinical presentation, a high index of suspicion and the use of anatomic and functional data. The ability of present treatment options to cure or significantly improve this particular form of hypertension with a subsequent reduction in morbid events makes it imperative for practicing physicians to do so.

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## Anal-Sphincter Saving Operations

PRESERVATION of the anorectal sphincter mechanism and the lower segment of the rectal muscle after colectomy and removal of the rectal mucosa for certain benign disorders was described several decades ago and was applied to patients with ulcerative colitis in 1947. The endorectal pull-through procedure did not gain extensive clinical application until 1964, when it was used in conjunction with a colonic pull-through for Hirschsprung's disease. A resurgence of interest in the endorectal ileal pull-through procedure for ulcerative colitis and colonic polyposis has occurred during the past decade as a result of better clinical results after using more precise operative techniques. During the past ten years about 1,400 such operations have been carried out by surgeons at certain large medical centers in the United States and Europe.

The endorectal ileal pull-through was initially constructed without a reservoir. During the past ten years, however, because of stool frequency and urgency, a reservoir was incorporated in the lower end of the pull-through segment to serve as a storage area. A protective ileostomy for two to four months has been found essential to minimize the risk of postoperative pelvic infection. Three basic reservoirs have been used: the S-shaped, the J-shaped and the lateral isoperistaltic ileal reservoir. Although each of the various reservoirs has provided satisfactory functional results for most patients undergoing the operation, about 20% to 30% of patients have needed a repeat operation or have had less-than-optimal function after the operation. The lateral reservoir may be revised most easily.

The neurogenic sensory and discriminatory mechanisms remain largely intact, and good continence can be achieved if the rectal mucosa is removed down to the dentate line, providing the anorectal sphincter muscle is not disturbed. The length of the rectal muscle retained above the ileoanal anastomosis need not be longer than 4 to 5 cm. Long rectal muscle segments have caused compression of the ileal reservoir and in some cases produced acute angulation of the ileum or reservoir, contributing to the development of partial outlet obstruction with stasis and reservoir inflammation.

Certain patients with obesity, with tight anal sphincter spasm and those with severe rectal mucosal disease may do better postoperatively if the pull-through operation is constructed without a reservoir. If a reservoir is used, the configuration appears to be less important than the assurance that the reservoir is short enough to avoid stasis and that the spout extending to the ileoanal anastomosis is short. Although patients generally will have less fecal urgency, frequency and nocturnal soiling with a reservoir (mean, 6.5 movements per 24 hours in three months) than without a reservoir (mean, 9.8 movements per 24 hours in three months), by six months the

patients without a reservoir will have a similar number of movements as those with a reservoir (5 to 7 per 24 hours).

Long-term follow-up with close attention to a patient's bowel pattern will lead to early detection of reservoir enlargement, outlet obstruction, ileoanal anastomotic stenosis, peripull-through sinuses and other complications. Almost all of these problems are surgically correctable if treated early. Most medications can be discontinued within six months in patients who do not have complications. Patients may return to full physical activities including competitive sports within three to four months. Of 150 patients with the pull-through operation done in our hospital, 136 are currently functioning well; review of the last 100 consecutive patients shows that all but 2 are currently progressing well (98%), indicating the decreased number of complications as our clinical experience has increased. The endorectal ileal pull-through operation is technically difficult, but close attention to the many details of operative and postoperative care is likely to provide gratifying long-term results and a very satisfactory alternative to a permanent ileostomy or Kocks's pouch.

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## Treatment of Asymptomatic Gallstones

THERE ARE THREE major issues in the treatment of asymptomatic gallstones. Should prophylactic cholecystectomy be done for asymptomatic gallstones? Are there any special factors that justify prophylactic cholecystectomy? Is incidental cholecystectomy indicated at laparotomy for another condition? Unfortunately, prospective and randomized trials to answer these questions have not been done.

Arguments used to justify prophylactic cholecystectomy include the "high" incidence of the likely development of symptoms or complications and the "small" risk of carcinoma of the gallbladder developing. The risk of carcinoma is so small that it is not an issue. In a study by Gracie and Ransohoff, the likelihood of symptoms developing in patients found to have asymptomatic gallstones was apparently 2% per year; this figure plateaued off so that at 15 years only 18% of patients became symptomatic. In those persons who become symptomatic, generally biliary colic occurs rather than a complication so that there does not appear to be increased morbidity or mortality in delaying cholecystectomy until symptoms appear. Therefore, it is difficult to justify prophylactic cholecystectomy for the average patient with asymptomatic gallstones.

Special factors reportedly increase the risk of complications of gallstones, thereby justifying prophylactic cholecystectomy. These include diabetes mellitus, nonvisualization of the gallbladder on oral cholecystography, stones larger than 2 cm, a calcified gallbladder, young age, patients requiring immunosuppression and pigmented stones associated with hemolytic anemias. Although reasonable arguments can be made for prophylactic cholecystectomy under these conditions, firm data are lacking. Diabetes, which according to surgical dogma is a risk factor for an adverse outcome in gallbladder disease, has recently been questioned as being an independent risk factor. Although most likely some risk factors justify prophylactic cholecystectomy, one has to fall back on clinical judgment rather than firm data in making a decision. It would generally be prudent to recommend prophylactic cholecystectomy in a relatively young patient with another of the aforementioned risk factors.

Finally, despite my personal aversion to incidental procedures during laparotomy for another reason, incidental cholecystectomy does seem to be reasonable as long as great care is taken against contamination.

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## Fine-Needle Aspiration of Thyroid Nodules

FINE-NEEDLE ASPIRATION of thyroid tumors is an increasingly popular method of obtaining a preoperative cytologic diagnosis and determining the malignant potential of a thyroid mass. In addition, other thyroid abnormalities such as chronic lymphocytic thyroiditis can be cytologically confirmed. Many large series have shown that fine-needle aspiration of the thyroid can be done with a high degree of safety and clinical specificity. These series show that cytologically unsatisfactory specimens occur in about 15% to 20% of aspirates. With proper physician training and experienced cytologists, false-negative rates of 2% and false-positive rates of about 20% can be achieved.

Comparative studies of fine-needle aspiration with large-needle (TruCut) or drill-needle biopsies have shown that fine-needle aspiration may have a higher diagnostic yield than the other large-needle techniques. The overall accuracy of fine-needle aspiration of the thyroid gland depends on the ability of the physician doing the aspiration, the adequacy of specimen preparation and the experience of the cytologist.

The role of fine-needle aspiration biopsy does not need to be limited to specialized referral centers, but does require that the cytologist and the physicians doing the procedures become proficient with this technique. Complications have been reported in most series, but these have been relatively benign. In addition to the diagnosis of primary thyroid neoplasms, fine-needle aspiration may also show the presence of lymphoma or metastatic carcinoma. Adding monoclonal antibody examination to the routine cytologic preparations may improve the overall accuracy and expand the indications for the fine-needle technique.

Currently, fine-needle aspiration biopsy of the thyroid should be considered a valuable diagnostic tool in the preoperative evaluation of a thyroid nodule. When the physician